Plan for Multimedia Epics Inc

A plan (roughly to give an idea)

1st Floor (20 Computers inside)

Hub

Hub

Socket

Hub

Internet

Backup
Server

Main
Server

2nd Floor (20 Computers inside with three 24 Port Hubs, one main Server, one backup Server & one Socket)

3rd Floor (20 Computers inside)

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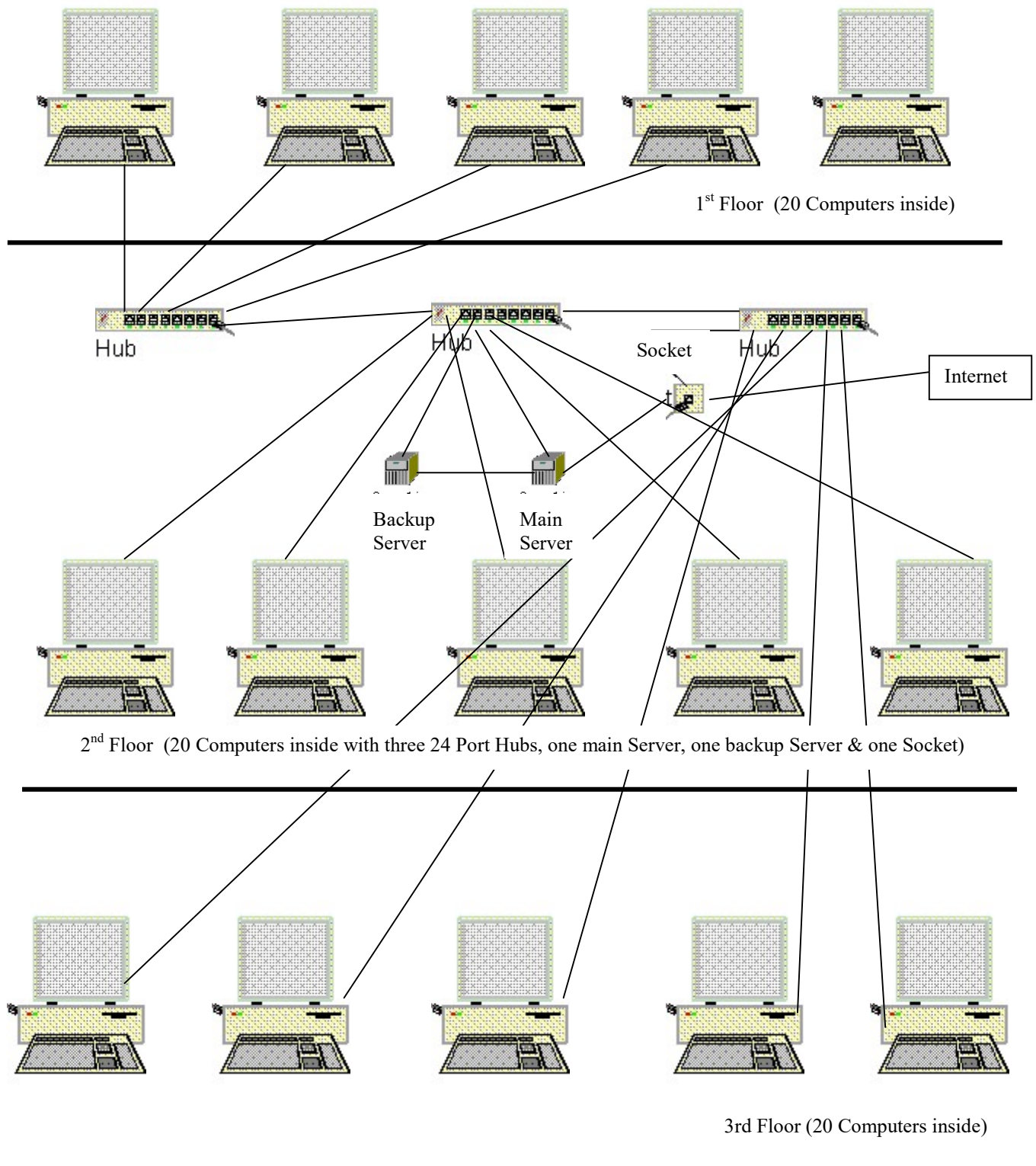
Assumptions for Multimedia Epics Inc

The following assumptions that have been made while going through designing a network system for Multimedia Epics Inc. are:

- They already has 60 Intel (PC) based computers and printers on the premises.
- They have the sockets for five users to use the ISDN connection.
- A 2Mbps leased line already connected to the office site.
- The server is combined of the print server, database server and a file server.
- They already have a supply of UPS in case of power failure.
- All PCs have Internet connections and modems to go with it.
- Deciding to leave the 2Mbps leased line as it is, as it would work out cheaper for the computer which they use the Internet all the time.
- Assuming that the company has suspended ceilings in their offices on each floor to allow for the cabling.
- I have decided to put 20 computers each in three floors as shown in enclosed plan layout.
- The servers (one main and one backup server), hubs, firewall, etc are on the second floor with necessary cooling facilities and security features.

A file server is used for managing files for the who network, and it is not usually have been used for any other purpose, some of the other file servers have been also known to run programs. When the file servers are being concerned with the speed at which the whole network functions will be depending on the speed of the computer which it is being used as the file server, as it can be wise to select a computer with the highest specifications to be the file server.

I have decided to have 2 x Compaq ProLiant ML370 Servers to link with 60 Computers, one for the main Server and the other one for the Backup Server.

The Compaq ProLiant ML370 has a good features like such as it uses Intel Pentium III from 667MHz up to 1.0 GHz processor speed, which it has some serious processor speed, 128MB of SDRAM ECC DIMM memory, which it can expand up to 4GB for improvement on memory performance. Also, it has 6 slots to buy larger capacity hard drives and plug them in to store important data or programs, etc. It costs £1,542 each for 733MHz model. The total price for buying 2 Compaq ProLiant ML370 Servers is £3084

I have choose this Server because it is very compatible with my connections like 10Base T cable, my hardware such as Ethernet Network Cards, etc. and it is very simple to use, in other words, just plug them up and go. Also, it has good specifications as well.

For more information about Compaq ProLiant ML370 Server, see enclosed Appendix with this assignment.

New Media LiveWire 10/100 PCI Card
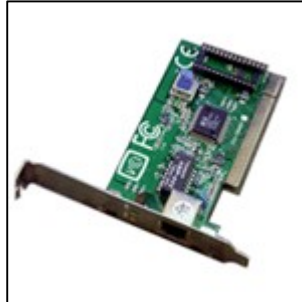
A network card (it is also known as network interface card) is a piece of hardware which it can be installed into one of the spare slots (in either PCI or ISA) inside the computer on the motherboard. Network cards are available for all different PC bus widths, from 8, 16 and 32 bits, and these cards are available in electronic/computer stores and it can be bought separately. The purpose of a network card is to allow a PC to be used as a terminal for a network.

I have decided to have 60 x New Media LiveWire 10/100 PCI Network Card to install them into empty PCI port on each computer motherboards. The price for this LiveWire 10/100 Card is $12.49 (£7.81) each. The total price for buying 60 Cards is $749.40 (£468.38).

I have choose this Network Interface Card because it has either 10 or 100Mbps Ethernet/Fast Ethernet speed support, two small LEDs on the metal bracket to show you what is happening with this Network Card, as some Network cards don't have. Also, its not very expensive to buy and its uses a RJ-45 (10Base T) type Connector cable to make a network of 60 networked computers, connected to Compaq ProLiant ML370 (733MHz) Main Server.

For more information about New Media LiveWire 10/100 PCI Card, see enclosed Appendix with this assignment.

UTP (CAT 5) 10/100BASE-T ETHERNET CABLE

The cables are an absolutely necessary part of any network and they can give a real importance to the cost of the whole system. Cabling means that the computers are linked together. There are many type of cables and they are the following:

- Fibre Optic cable
- Coaxial cable
- Shielded twisted pair wire
- Unshielded twisted pair wire

I have decided to purchase 3 x Connex RJ-45 to RJ-45 Ethernet Cable 15m (pack of 25) making it 75 RJ-45 to RJ-45 Ethernet Cables altogether, having 15 of 15m RJ-45 to RJ-45 left over to connect other devices such as printers or more computers in the future. The price for this Ethernet Cable is £281 each. The total price of buying 3 packs of 25 Ethernet 15m Cables is £843.00

I have choose this Ethernet Cable because it save me from buying separate connectors to make a cable which is costing time and money, as it very simply to connect (to other devices requiring a RJ-45 (10Base T) type Connector.

For more information about Connex RJ-45 to RJ-45 Ethernet Cable 15m (pack of 25), see enclosed Appendix with this assignment.

Intel Express 330T 24 port Stackable Dual Speed Hub w/ 24x RJ-45 ports

Hubs or concentrators are hardware devices, which it enables LANs to be linked to each other and to WANs. The ring or bus topologies of a LAN can be connected to the backbone of a WAN.

I have decided to purchase 3 x Intel Express 330T 24 port Stackable Dual Speed Hub, having 72 x RJ-45 Connector type ports altogether, leaving out 12 ports left for expansion to connect more computers or more hubs when required in the future. The price for this Intel Express 330T 24 port Stackable Hub is £566.15 each. The total price of buying 3 x Express 330T Stackable Hubs is £1698.45

I have choose this Intel Express 330T 24 port Stackable Dual Speed Hub because it can be running at 100Mb with downward capability with to 10MB.

For more information about Intel Express 330T 24 port Stackable Dual Speed Hub, see enclosed Appendix with this assignment.

Axent Firewall

A firewall is a system which it enforces an access control policy between two networks. The purpose of a firewall is to keep the intruders out the system while still letting one to carry on with their job in order to get it done.

I have choose this Axent Firewall Version 6.5 which it requires Microsoft Windows NT Operating System in order to use this Software package. The price for Axent Firewall is $1,099.80 (£687.38). See enclosed Appendix, for more information about Axent Firewall.

1port 10Mbps Network Ethernet Print Server

When either a computer or terminal in a network has a printer or the printers are connected to a computer a terminal, then it will be referred to as a printer server. In a network, each user sends the print commands over to the printer server, which the printer server will be taking care of the printing for all the users in a network.

I have choose this 1port 10Mbs Network Ethernet Print Server because it is a multi-protocol print server supporting any operating system including Windows NT. Not only this server gives the users a greater flexibility, but also it gives an overall network performance. The price for 1port 10Mbs Network Ethernet Print Server is $48 (£30). See enclosed Appendix, for more information about 1port 10Mbs Network Ethernet Print Server.

ISDN NT1 Cable

I have choose this ISDN NT1 Cable because I think that is a right cable to use in order to connects five users at home to the main server at the work place. The price for ISDN NT1 Cable is $23.48 (£14.59). See enclosed Appendix, for more information about ISDN NT1 Cable.

Software

All computer-based communications systems must use software (they are the instructions or a set of programs which it is used for the computer. It is made up into a number of series of instructions that performs a particular task that is called a program.) to make the hardware components able to operate (controls the workings of the computer). As you know by now, all the computer systems needs operating system and utilities (system software) to make them working, and communications systems needs extra more software to be added. Also user interface software and communications software (e.g. Phone Dialler, Comm Central, etc.) are needed as well. It is so important to use communications software, which it is able to work properly with the modem selected that is if you have a modem on your computer.

There are many of Operating Systems available in the market to choose from and all of them are good in their own rights. There are a few operating systems with a small description of each at the following:

Windows 95

The company called Microsoft in around 1996 launched it. This Operating System (OS) was written with a use of networks. The basic network paradigm is that of a Workgroup, a collection of peer PCs connected to a common LAN and using the same base communication protocol. Note that Windows 95 is a 32-bit multitasking system, and programs designed to use this capability will run much faster than an earlier version of Windows e.g. DOS (Disk Operating System) and Windows 3.1, Windows 3.11 for Workgroups, etc.

Novell Netware

It is the most established and the oldest providers of NOS (Network Operating System) systems, they have created the LAN NOS in around 1983. The latest version was Novell Intranet Ware V4.11 and V5 has been released. The Netware is most powerful, scalable, flexible and reliable NOS.

Unix

It has a long history as an operating system for multi users main frame and mini computers systems. Recent developments have increased the use of Unix as a NOS for PC based LAN networks. This operating system (Unix) has a few disadvantages, that is, the complexity, a legacy of its history and its lacks of support of Microsoft Applications.

Network Operating System

I have decided to purchase 3 x Windows NT Server 4.0, as it has 25 licenses for 25 users, which means that I have 75 licenses and three same operating system software, as it very useful because if one of the software package is damaged in some way, e.g. the CD is broken, then it can be used with another spare one. Leaving out 15 licenses left over for 15 users to add more workstations for the users to use in the future.

I have choose this Network Operating System because I think that is the most powerful operating system for business computing and it is very suitable for a large network of computers. The price for Windows NT Server 4 is £1,254 with a single server for 25 users. The total price for buying 3 x Windows NT Server 4 is £3,762.00.

For more information about Windows NT Workstation 4.0, see enclosed Appendix with this assignment.

Security

The chance of security can be ending up with serious problems will be greater when working (using) with networks as the data or information is being passed around to and from many people and computer terminals. Also, if a virus does to able to manage to get into one node, it will then travels throughout the whole system and it will affect all the other computer terminals.

Forced Recognition Of Security

Forced recognition of security is are used to make sure that the users to know the importance of the security, for example, when an employee signs a contract which it states as a non-disclosure clauses which it means that, either he or she can be dismissed from employment in which they are been working in if they break any contract conditions including communicating with any confidential information to the next person or the other people.

Physical Access

Physical controls is when someone is not allowed to get near to the computer, or even not to close enough to switch the computer on and start to use it. It can be done in a number of ways, one of them is to not allow anyone controlling the access to the room with the computers are inside the room, it may be worked with a aid of keypads or any other special cards (i.e. identity cards, etc.) as an example. Another one is not to allow the wrong people access which it could be guards or plastic pass cards that it is being used to control access to the whole building. And the last one is locks on the computers can be used to not allow anybody without a proper access to turn the computers on, or simply just locking the computers away when the computers are not being used after hours or at night before leaving.

Logical Access

Logical control is used for controlling what the user has access to which it help to prevent a user or anyone from accessing, editing or damaging the most important information or data (the information is can be valuable) when they are not allowed to. There are two main types of network security and they are user level security and share level security. In user level security, the user must enter their user name (either he or she) and their password and the both of them must be correct before they are being able to log on to the network. Share level security are strict in a way, which it means that every single resource available on the network must have a password in order to be entered in so that, it allows to be able to have access to it.

The Data Protection Act 1984

The Data Protection Act was made in 1984 which it is only applies to automatically processed information (i.e. not information in paper files) which it relates to living individuals. For example, it does not cover information which it is relates only to a company or organisation and not to an individual. Organisation who are holding data relating to living individuals must register with the Data Protection Registrar, and must follow to the principles (as shown below), or they may be prosecuted. There may be a fee for the release of the information.

The data protection principles

1) Data shall be obtained fairly and lawfully.
2) Data shall only be held for specific purposes.
3) Data shall not be used in a compatible manner.
4) Data shall not be excessive to those purposes.
5) Personal data must be accurate and up to date.
6) Data shall not be entitled to have access to their data and where appropriate corrected.
7) Individuals shall be entitled to have access to their data and where appropriate corrected.
8) Appropriate security measures shall be taken to guard against unauthorised access or alteration.

Access rights

The access rights allows users to set rights to their directories, subdirectories and even individual files and it is possible to assign certain users read-only status, which it means that they can view the contents of the file but do not make any changes to the file. By the way the access rights are have been given mostly by the Local Area Network (LAN) software.

Copyright

The Copyright is a law against other people from copying the material which it is protected by copyright. Also it make sure that the creators of a software package or database are protected by copyright.

Software piracy

Software piracy involves the illegal copying of computing software and that is the same as software theft. If a company has a produced new software which it has developed by the software programmers (software developers), then all the money and time will be spent to produce a new software. Unfortunately for software developers, when people steal or copy and deal out software to other people instead of buying it, some of the people make extra copies of the software for sale. But if the people keep doing that, the software developers will end up loosing a lot of money.

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Copyright of data

The data that it has first produced and it protected by copyright. For example of this, if the producer has published the data, which it has, been protected by copyright to stop the other publishers from re-producing.

The copyright, Designs and Patents Act 1988

It is a criminal offence if got caught by copying or stealing software, or any manuals which it comes with the software package(s) without any permission from the copyright owner or a licence from the copyright owner, and that is the person who is the software developer. It is offence There is a act which it makes it illegal to the organisation which they encourage to copy or deal out copies of illegal software and that is called The copyright, Design and Patents Act 1988.

Virus checking

What is a virus?

A virus is a small program designed to hide itself on to the computer. It cannot do physical damage, but it can give instructions to the computer to do anything from displaying an unwanted message to totally wiping out your hard disk. A virus can be built into an otherwise innocuous program, or it can hide itself away on a floppy disk. It is called a virus because, like a real virus in the body, it has the ability to replicate and press itself on. It does this by copying itself on to the hard disk and then back to any floppy disk put into the computer, so that it can go to infect another computer.

How to protect against a virus

The best way to solve a virus problem is not to catch one in the first place. The most common way of catching a virus is from a floppy disk made on another home or office computer. Where possible, try to avoid using disks copied from the other computers. You should also consider investing in virus-checking software e.g. Norton AntiVirus, etc. that will spot a virus and chase it out of your system. When you first put a copied disk in your computer, you must run the virus checker before doing anything. Prevention is better than cure.

Back-up procedures

Back-up is involved of the creation of copies of everything including the programs and data so that should the programs or data be lost, they are can be recreated at any time using the back-up copies. It is the best way to protect against disasters such as a disk failing, a file being erased, or even your computer is being stolen. The problem with backing up, and the reason that few people bother, is that you tend to need hundreds of floppy disks and it takes hours of work. But there is an alternative that doesn't take so long and protects you against the effects of losing a hard disk. Note that back-up copies are should be kept on a separate disk or tape and stored away from the computer system otherwise that the back-up copy may be get damaged. If a backup copy were kept on the same disk as the original, then if this disk were stolen or destroyed by fire the back-up copy would also be lost.

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There are rules for backing up and they are the following:

- Try not to keep the back-up disk near the computer. What happens if the computer is stolen, the thieves will probably steal the disks as well. Also, ever, ever, try not to keep the back-up disk(s) in the drawer of the desk because this is where the first place will the thieves look.
- If you are holding a awful lot of data it would be very expensive to recreate, and it will take a really long time to re-enter all that information then you should invest in a fire/burglary safe to protect your back-ups from heat, theft, dust, humidity and damage.

Forced recognition of security

Information Technology have used forced recognition of security for different types of tasks, and that is including the operating nuclear power stations, and storing and updating medical records, insurance records and even police records. It is very important so that the security systems are in place to protect the system from deliberate or accidental harm with awful lot of information being held around.

Non-disclosure agreements

Non-disclosure agreements are placed in a contract of the employment to on employees when they are no more working in an organisation. Sometimes non-disclosure agreements are used to prevent the person from speaking about their previous employment.

Official Secrets Act

This act was used to protect the privacy of information, which it is held by the Crown, and to protect national security. Some of the people have to sign the official Secrets Act as a condition of their employment that is including prison warden, police officers etc.

Appendixes

http://www.GreatCables.com/product.asp?dept%5Fid=12&item=AE%2D360PCI%2D20P++&mscssid=5JQ0U98W7CSR2G0V00JP4MUJ5MPH3NBB

http://www.cables.cc/cgi/cart.pl?db=stuff.dat&category=connectors

https://www.gcctech.com/servlets/Order/Order.html?section=2&warranty=0&quantity=0&printerID=45

http://www.tribecaexpress.com/firewalls.htm

http://www.tribecaexpress.com/checkpointprice.htm

http://www1.action.com/cgi-bin/cluster.x5?home/home.shtml for CAT 5 UTP CABLES

http://www.homepcnetwork.com/hdervwlivewire.htm

http://216.32.180.250:80/cgi-bin/linkrd?_lang=EN&lah=495c504b6db1dd10fb447bd42ea4679b&lat=988723839&hm___action=http%3a%2f%2fwww%2et4000%2efreeserve%2eco%2euk%2fnetpad%2ehtm

http://www.dell.com/us/en/esg/topics/esg_pedge_towermain_servers_3_pedge_4400.htm

http://computers.search.shopping.yahoo.com/search/comp?p=Windows+NT+4+Server&Y=1&r=&f=14489115&mid=&did=57&q=&X=0

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